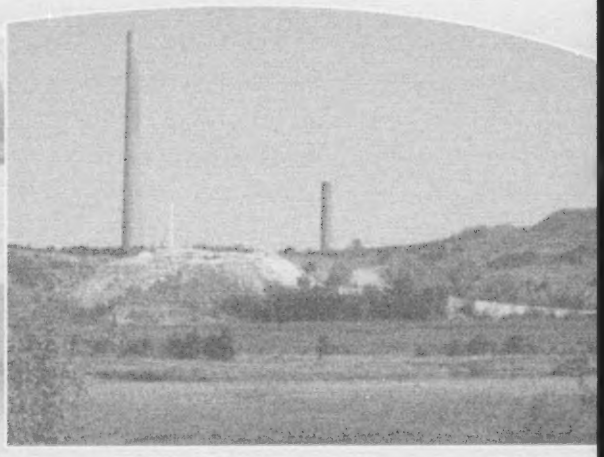
Environment Canada Environnement Canada

Facility Greenhouse Gas Emissions Reporting

Technical Guidance on Reporting Greenhouse Gas Emissions

October 2014



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Environment Canada
Inquiry Centre
10 Wellington Street, 23rd Floor
Gatineau QC K1A 0H3
Telephone: 819-997-2800
Toll Free: 1-800-668-6767 (in Canada only)
Fax: 819-994-1412
TTY: 819-994-0736
Email: enviroinfo@ec.gc.ca

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REPORTING REQUIREMENTS OF 2014 GREENHOUSE GAS EMISSIONS

In the *Canada Gazette* notice entitled *Notice with respect to reporting of greenhouse gases (GHGs) for 2014*, published in October 2014, Environment Canada released the GHG reporting requirements for the calendar year 2014. This notice supports the annual mandatory reporting of GHG emissions by facilities under Environment Canada's GHG Emissions Reporting Program (GHGRP). The reporting requirements for 2014 are the same as last year's.

As initiated for the reporting of 2013 emissions, facilities are required to use updated Global Warming Potential (GWP) values to assess whether they meet the 50-kilo-tonne carbon dioxide equivalent (CO_2 eq) reporting threshold and in reporting their emissions in CO_2 eq values. These updated GWP values can be found in the Intergovernmental Panel on Climate Change[1] (IPCC) 4th assessment report.

The 2014 Canada Gazette notice is available online at http://gazette.gc.ca/rp-pr/p1/2013/2013-11-02/html/notice-avis-eng.html#d114. Please visit Environment Canada's Greenhouse Gas website (www.ec.gc.ca/ges-ghg) for further details on the GHGRP.

This latest version of the technical guidance document contains minor changes (e.g., updated references for IPCC estimation guidance, program contact information) and additional information to help reporters identify the proper categories under which certain emissions (i.e., for biomass) should be reported.

1 Please refer to Section 3 of this document for further details on the IPCC. Links to the related documents can be found in the References section of this document.

GLOSSARY OF TERMS

The following words and terms used in this guidance document shall have the indicated meaning:

Biomass means plants or plant materials, animal waste, or any product made of either of these. Biomass includes wood and wood products, charcoal, and agricultural residues and wastes (including organic matter such as trees, crops, grasses, tree litter or roots); the portion of biologically derived organic matter in municipal and industrial wastes; landfill gas; bioalcohols; black liquor; sludge gas; and animal or plant-derived oils.

Carbon dioxide equivalent (CO_2 eq) is a unit of measure used to allow the addition of or the comparison between gases that have different global warming potentials (GWPs). Since many greenhouse gases (GHGs) exist and their GWPs vary, the emissions are added in a common unit, CO_2 eq. To express GHG emissions in units of CO_2 eq, the quantity of a given GHG (expressed in units of mass) is multiplied by its GWP.

CAS Registry Number, or CAS Number is a unique numerical identifier in the Chemical Abstracts Service Registry that is given to every chemical that has been described in the literature. The Chemical Abstracts Service, a division of the American Chemical Society, assigns these identifiers.

CO_2 emissions from biomass decomposition are releases of CO_2 resulting from aerobic decomposition of biomass.

Contiguous facility means all buildings, equipment, structures and stationary items that are located on a single site or on contiguous or adjacent sites; are owned or operated by the same person; function as a single integrated site; and include wastewatercollection systems that discharge treated or untreated wastewater into surface waters.

Direct emissions are releases from sources that are located at the facility.

Facility means a contiguous facility, a pipeline transportation system or an offshore installation.

GHGs means greenhouse gases.

GWP means global warming potential. It is calculated as the ratio of the time-integrated radiative forcing (i.e., the amount of heat-trapping potential, measured in units of power per unit of area, e.g. watts per square metre) that would result from the emission of 1 kg of a given GHG to that from the emission of 1 kg of CO_2. For example, the GWP for nitrous oxide (N_2O) is 298, which means that 1 kg of N_2O emissions is equivalent to 298 kg of CO_2 emissions. By convention, the GWP values being used are those that apply to a 100-year time horizon.

HFCs means hydrofluorocarbons.

Offshore installation means an offshore drilling unit, production platform or ship, or sub-sea installation and that is attached or anchored to the continental shelf of Canada in connection with the exploitation of oil or gas.

PFCs means perfluorocarbons.

Pipeline transportation system means all pipelines that are owned or operated by the same person within a province or territory and that transport processed natural gas, and their associated installations including storage installations but excluding straddle plants or other processing installations.

Reporting company means a person who operates one or more facilities that meet the reporting threshold as set out in Schedule 3 of the Canada Gazette notice. The latest Canada Gazette notice for the GHG Emissions Reporting Program can be found on Environment Canada's Greenhouse Gas website (www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=F3E7B38E-1).

PREFACE

Background

Canada is working towards fulfilling its obligations and domestic climate change policy objectives by ensuring that it has the capacity to quantify, track and report progress on the reduction of greenhouse gas (GHG) emissions in a way that meets a required level of accuracy, thoroughness, transparency and public credibility.

In March 2004, the Government of Canada initiated a phased approach to the collection of GHG emissions data and related information. The GHG Emissions Reporting Program (GHGRP) was launched through the publication of the first *Canada Gazette* notice in March 2004, which set out basic reporting requirements. A *Canada Gazette* notice is published every year requiring the reporting of GHG emissions for the calendar year specified in the notice.

This program continues to be a part of Canada's effort to develop, through a collaborative process with the provinces and territories, a harmonized and efficient single-window reporting system to meet the GHG reporting needs of all jurisdictions and minimize the reporting burden for both Canadian industry and governments. The information generated under the GHGRP supports a number of important objectives, including providing Canadians with consistent information on GHG emissions, validating industrial emission estimates presented in the National Greenhouse Gas Inventory, supporting GHG information needs of provinces and territories, and supporting regulatory initiatives.

With the Government of Canada's commitment to reduce Canada's total GHG emissions by 17% from 2005 levels by 2020, accurate tracking of GHG emissions, through the National Greenhouse Gas Inventory, is an important part of assessing Canada's overall environmental performance. By providing a more precise picture of the sources and amounts of GHG emissions from Canadian facilities, the GHGRP will contribute to the development, implementation, and evaluation of climate change policies and strategies. The facility data collected through this program is published annually and is used to compare and validate data presented in the National Greenhouse Gas Inventory Report.

Purpose

The purpose of this document is to provide guidance to potential reporters to help determine if they are required to submit a report and to present technical information related to GHG emissions reporting. This technical information includes the GHGs and emission sources subject to reporting, along with information on methods for calculating emissions and the required reporting format. An overview of the reporting process is also described herein. Separate guidance is available regarding the online Single Window System that should be used to submit a report (see the GHGRP's website at www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=040E378D-1). This guidance includes instructions on how to use the reporting system, how to complete and submit the report, and other relevant information.

1 REPORTING PROCESS OVERVIEW

The legal basis for the GHGRP is the *Notice with respect to reporting of greenhouse gases (GHGs) for* [a specified year], which is published annually in the *Canada Gazette*, Part I under the authority of subsection 46(1) of the *Canadian Environmental Protection Act, 1999* (CEPA 1999).

The current GHG reporting requirements stipulate that all persons who **operate** a facility that emits 50 000 tonnes (or 50 kt) of carbon dioxide equivalent (CO_2 eq) (the reporting threshold) or more of GHGs in the calendar year are subject to the reporting requirements and must report their emissions information to Environment Canada. Facilities need to calculate their total direct emissions (in CO_2 eq units) of the GHGs covered by this reporting requirement to determine if they are required to report.

If the facility's emissions meet or exceed the reporting threshold, the facility is required to submit a report (see Figure 1 for an overview of the reporting process). If the facility's emissions fall below the reporting threshold, the facility is not required to submit a report but is encouraged to submit a voluntary report nonetheless.

A reporting company with a facility or facilities subject to the reporting requirements must include with the GHG emissions report a statement of certification, signed by an authorized signing officer, indicating that the information submitted is true, accurate and complete. This statement should be submitted electronically with the GHG report through the online reporting system.

The reporting company may also submit, with the GHG report, a written request that the reported information be treated as confidential. If applicable, the reporting company must complete the confidentiality request process, which includes preparing the written request and submitting it online with the report to Environment Canada.

The information that must be submitted includes general information about the reporting company and facility (e.g., name, address/location, contacts, parent companies, various identifiers) and the GHG emissions information for the facility in question. Each facility is required to report total direct GHG emissions as per the reporting format described in Section 4 of this document.

If the person who operates a facility changes during the calendar year, the person who operates the facility as of December 31st of that year shall report for the entire calendar year. If operations at a facility are terminated during the calendar year, the last operator of that facility is required to report for the portion of the calendar year during which the facility was in operation.

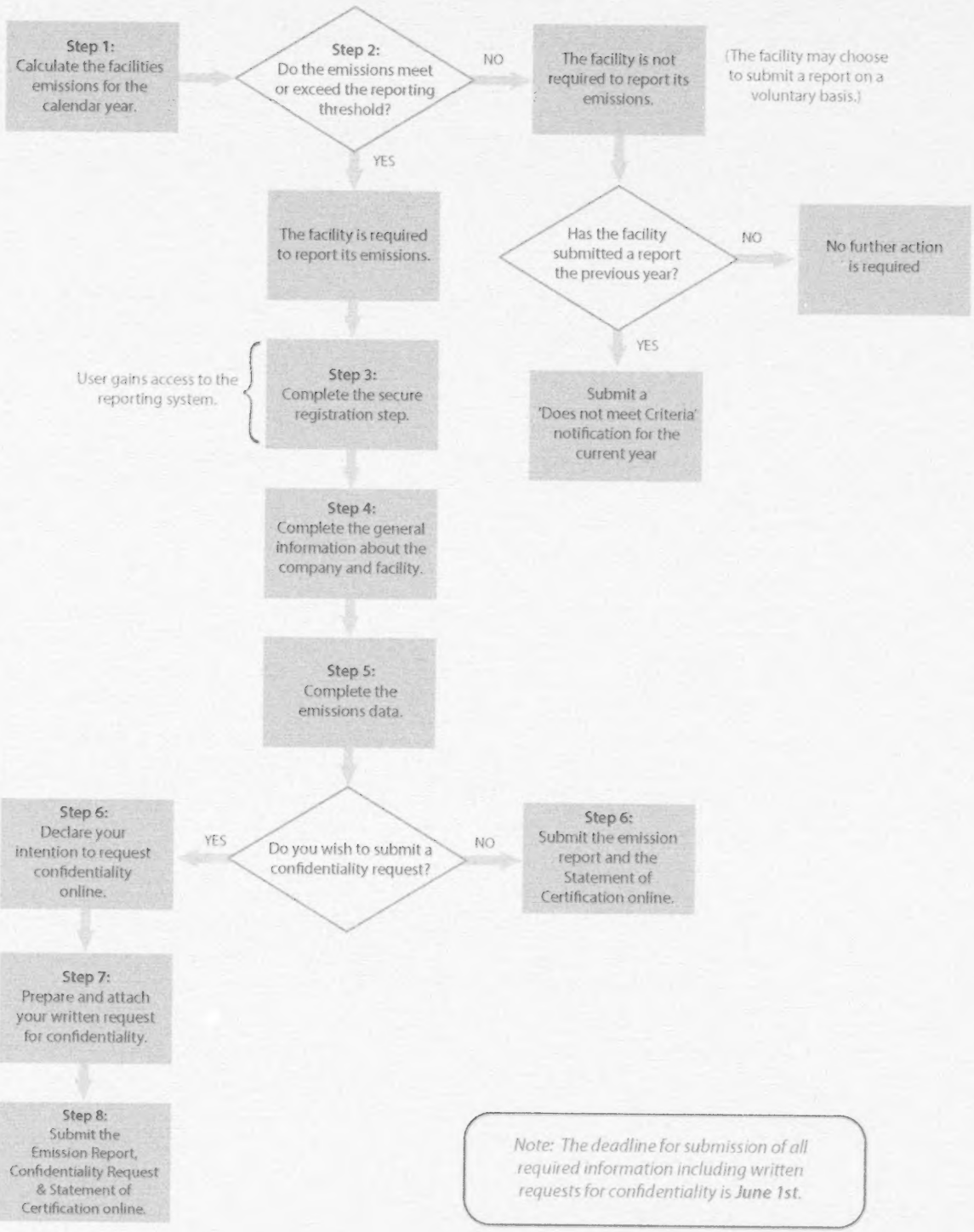
All information (i.e., the GHG report, statement of certification and confidentiality request, if applicable) must be submitted by the June 1st reporting deadline.

If a facility reported emissions in a previous year but does not meet the current year's reporting threshold, it is required to notify Environment Canada's Pollutant Inventories and Reporting Division. Facilities can submit a Does Not Meet Criteria notification online through the Single Window System.

For any questions about Environment Canada's GHGRP, please contact:

Pollutant Inventories and Reporting Division
Environment Canada
Telephone: 819-938-3258 or
toll-free at: 1-877-877-8375
Email: ges-ghg@ec.gc.ca

Figure 1: Reporting Process Overview


Step 1: Calculate the facilities emissions for the calendar year.
Step 2: Do the emissions meet or exceed the reporting threshold?
NO
The facility is not required to report its emissions.
(The facility may choose to submit a report on a voluntary basis.)
YES
The facility is required to report its emissions.
Has the facility submitted a report the previous year?
NO
No further action is required
YES
Submit a 'Does not meet Criteria' notification for the current year
User gains access to the reporting system.
Step 3: Complete the secure registration step.
Step 4: Complete the general information about the company and facility.
Step 5: Complete the emissions data.
Do you wish to submit a confidentiality request?
YES
Step 6: Declare your intention to request confidentiality online.
NO
Step 6: Submit the emission report and the Statement of Certification online.
Step 7: Prepare and attach your written request for confidentiality.
Step 8: Submit the Emission Report, Confidentiality Request & Statement of Certification online.
Note: The deadline for submission of all required information including written requests for confidentiality is June 1st.

2 REPORTING CRITERIA

2.1 Reporting Threshold

The reporting threshold under the current GHG reporting requirements is 50 kt CO_2 eq. A facility is subject to the reporting requirements if its total direct emissions of GHGs meet or exceed the reporting threshold. To complete this assessment, it is necessary for a facility to calculate its total emissions for the relevant calendar year for the GHGs and emission sources covered. Total emissions are calculated as the sum total mass of each of the gases or gas species multiplied by their respective global warming potential (GWP) (see Equation 1).

Emissions of individual species of hydrofluorcarbons (HFCs) and perfluorocarbons (PFCs) must be quantified separately and then multiplied by their GWPs. Only the emissions of HFCs, PFCs and sulphur hexafluoride (SF_6) that fall within the definitions of industrial processes and industrial product use must be included in the calculations (see Section 4.3).

CO_2 emissions from biomass materials, as further discussed in Section 3.3, must **not** be included in the threshold calculation. However, if a report is required, CO_2 emissions from biomass combustion must be quantified and reported separately as part of the reportable GHG information (see Section 4). Methane (CH_4) and nitrous oxide (N_2O) emissions from biomass-related sources must be included in the reporting threshold calculation and reported as part of the GHG emission totals, if a report is required.

2.2 Greenhouse Gases Subject to Reporting

The GHGs that are subject to mandatory reporting are listed in Table 1. The GWP and Chemical Abstracts Service Registry Number (CAS Number) for each of these GHGs are also listed in the table. The GWPs listed in the table are updated values taken from the Intergovernmental Panel on Climate Change (IPCC) 4th assessment report, stemming from improvements in climate change science. These updated GWP values were applied starting with the reporting of 2013 data under the GHGRP and will continue into future years. For years prior to 2013, facilities should refer to the *Canada Gazette* notices previously published for the list of GWP values to use (available at www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=F3E7B38E-1) in determining if they meet the reporting requirements.

Equation 1:

$$Total\ Emissions = \sum_{1}^{i}(E_{CO_2} \times GWP_{CO_2})_i + \sum_{1}^{i}(E_{CH_4} \times GWP_{CH_4})_i + \sum_{1}^{i}(E_{N_2O} \times GWP_{N_2O})_i + \sum_{1}^{i}(E_{PFC} \times GWP_{PFC})_i + \sum_{1}^{i}(E_{HFC} \times GWP_{HFC})_i + \sum_{1}^{i}(E_{SF_6} \times GWP_{SF_6})_i$$

where:
E = total emissions of a particular gas or gas species from the facility (tonnes);
GWP = global warming potential of the same gas or gas species (see Section 2.2);
i = each emission source.

Table 1: Greenhouse Gases and Gas Species Subject to Mandatory Reporting

Greenhouse Gas	Formula	CAS Number	100-year GWP*
Carbon dioxide	CO_2	124-38-9	1
Methane	CH_4	74-82-8	25
Nitrous oxide	N_2O	10024-97-2	298
Sulphur hexafluoride	SF_6	2551-62-4	22 800
Hydrofluorocarbons (HFCs):			
HFC-23 (trifluoromethane)	CHF_3	75-46-7	14 800
HFC-32 (difluoromethane)	CH_2F_2	75-10-5	675
HFC-41 (fluoromethane)	CH_3F	593-53-3	92
HFC-43-10mee (1,1,1,2,2,3,4,5,5,5-decafluoropentane)	$C_5H_2F_{10}$	138495-42-8	1 640
HFC-125 (pentafluoroethane)	C_2HF_5	354-33-6	3 500
HFC-134 (1,1,2,2-tetrafluoroethane)	$C_2H_2F_4$ (Structure: CHF_2CHF_2)	359-35-3	1 100
HFC-134a (1,1,1,2-tetrafluoroethane)	$C_2H_2F_4$ (Structure: CH_2FCF_3)	811-97-2	1 430
HFC-143 (1,1,2-trifluoroethane)	$C_2H_3F_3$ (Structure: CHF_2CH_2F)	430-66-0	353
HFC-143a (1,1,1-trifluoroethane)	$C_2H_3F_3$ (Structure: CF_3CH_3)	420-46-2	4 470
HFC-152a (1,1-difluoroethane)	$C_2H_4F_2$ (Structure: CH_3CHF_2)	75-37-6	124
HFC-227ea (1,1,1,2,3,3,3-heptafluoro-propane)	C_3HF_7	431-89-0	3 220
HFC-236fa (1,1,1,3,3,3-hexafluoro-propane)	$C_3H_2F_6$	690-39-1	9 810
HFC-245ca (1,1,2,2,3-pentafluoro-propane)	$C_3H_3F_5$	679-86-7	693
Perfluorocarbons (PFCs):			
Perfluoromethane (tetrafluoromethane)	CF_4	75-73-0	7 390
Perfluoroethane (hexafluoroethane)	C_2F_6	76-16-4	12 200
Perfluoropropane (octafluoropropane)	C_3F_8	76-19-7	8 830
Perfluorobutane (decafluorobutane)	C_4F_{10}	355-25-9	8 860
Perfluorocyclobutane (octafluoro-cyclo-butane)	$c\text{-}C_4F_8$	115-25-3	10 300
Perfluoropentane (dodecafluoro-pentane)	C_5F_{12}	678-26-2	9 160
Perfluorohexane (tetradecafluoro-hexane)	C_6F_{14}	355-42-0	9 300

* GWPs in Table 1 are from IPCC (2006).
Note: These updated GWPs apply to 2013 data and future years.

3 BASIC CONCEPTS FOR REPORTING EMISSIONS

3.1 Relationship with UNFCCC and IPCC

The federal government, specifically Environment Canada, is responsible for developing and reporting a reliable, accurate and timely National Greenhouse Gas Inventory as part of its obligations under the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC is the first international legal instrument that deals directly with climate change.[2] To fulfill its obligations, Canada must estimate its national GHG emissions according to the comprehensive guidance provided by the UNFCCC, which includes reference to the following key technical document that was developed by the Intergovernmental Panel on Climate Change (IPCC).[3]

- *2006 IPCC Guidelines for National Greenhouse Gas Inventories* (IPCC, 2006)[4]

National GHG emissions and removals are reported to the UNFCCC according to the manner, format and frequency dictated by the UNFCCC Reporting Guidelines.[5]

Under the GHGRP, currently no specific estimation methods are prescribed. Reporters can choose the quantification methodologies most appropriate for their own particular industry or application. However, reporting facilities must use methods for estimating emissions that are consistent with the applicable methods set out in the UNFCCC Reporting Guidelines.

The IPCC Guidelines mentioned above describe various approaches to estimating GHG emissions at the national level, which can be applied at the facility level. These documents are available at the following link: www.ipcc-nggip.iges.or.jp/public/2006gl/index.html.

3.2 Key Elements in Calculating Emissions

The following key characteristics of the IPCC Guidelines are useful for reporters when calculating their facility's GHG emissions.

The following key characteristics of the IPCC Guidelines and Good Practice Guidance documents are useful for reporters when calculating their facility's GHG emissions:

1. *The availability of a number of differing "tiers" of calculation methods*

   For various categories of emission sources, there are several ways of calculating the emissions, described as tiers (e.g., Tier 1, Tier 2, Tier 3), and each tier has an associated increasing level of detail and accuracy (e.g., a Tier 2 method is considered more accurate than a Tier 1 method).

2. *The use of specific emission factors or data*

   An emission factor is a value that quantifies emissions associated with an activity (e.g., fuel combustion). To evaluate GHG emissions, "default emission factors" are provided for many different fuels and activities. These default emission factors are considered to be less accurate than country-specific factors and even less accurate than process-specific factors. Reporters should use Canada-specific emission factors[6] or, better yet, industry-specific or technology-specific ones, where available. For example, the combustion of natural gas

2 The UNFCCC was adopted at the June 1992 "Earth Summit" in Rio de Janeiro and has been in force since March 1994. Its ultimate objective is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system" (United Nations, 1992).

3 The IPCC, established in 1988 by the World Meteorological Organization and the United Nations Environment Programme, makes periodic assessments of the climate change issue and reports to governments as appropriate. It also provides scientific and technical advice to the Subsidiary Body for Scientific and Technological Advice to the UNFCCC.

4 The *2006 IPCC Guidelines for National Greenhouse Gas Inventories* consists of five volumes and includes new sources and gases as well as updates to previously published methods.

5 The UNFCCC Reporting Guidelines are contained within the UNFCCC Secretariat's *Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013, Addendum, Part two: Action taken by the Conference of the Parties at its nineteenth session.*

6 Environment Canada uses various emission factors that are specific to Canada for estimating emissions from several emission sources. For more details, see the latest National Greenhouse Gas Inventory Report (a link to this report is accessible at www.ec.gc.ca/ges-ghg). Reference details are provided in Appendix B.

in a boiler results in emissions of GHGs such as CO_2, CH_4 and N_2O. Each has published emission factors that relate its emission rates to quantities of natural gas burned. To determine emissions, a facility would need to determine the total quantity of natural gas consumed during the calendar year (using billing records or meter reading) and multiply this quantity by the emission factor for each GHG. Canada's latest inventory report provides up-to-date Canada-specific emission factors and information to assist in quantifying emissions.

3. *A focus on the prioritization of effort*
   The IPCC suggests that the most effort on quantifying emissions should be spent on those sources that are the most critical: those that make up the largest quantity, are responsible for the greatest increase or decrease, or have the highest level of uncertainty associated with them.

Although comprehensive and rigorous, the IPCC Guidelines provide a flexible approach to GHG calculation procedures. The prioritization of emission sources of greatest importance is also emphasized. In prioritizing the work, these guidelines recognize that the more specific the emission factor or methodology (in terms of geography, facility or process), the better the emission estimate should be.

In the spirit of the IPCC Guidelines, reporters should prioritize their efforts when calculating their GHG emissions. This concept can be applied by identifying the emission sources of greatest significance at the facility and using a higher level of effort when calculating emissions from these sources. Since these emission sources have a greater impact on the totals, the use of more detailed methods would be appropriate. For example, for significant sources, efforts could be focused on using available facility- or process-specific emission factors or estimation methods, as opposed to general or default emission factors or estimation methods. Applying a lower level of effort (i.e., less detailed methods) to calculate emissions for less significant sources would minimize the impact on the level of accuracy.

Since no absolute quantification standards are prescribed at this point, reporters can be flexible in their choice of emission calculation procedures. It is recognized that the approaches chosen will depend to a certain extent on the information available for the facility.

3.3 Emissions from Biomass

3.3.1 Combustion of Biomass

In accordance with UNFCCC Reporting Guidelines, special consideration is necessary when reporting CO_2 emissions from biomass in national inventories to ensure that there is no double counting. These guidelines, require the reporting (although not the counting) of CO_2 emissions resulting from the combustion of biomass materials. These emissions are not included in the national total, nor is the reverse process ("sinks"). That is, neither the CO_2 emitted by combusted biomass nor that absorbed by growing biomass is included in the national total.

In order to be consistent with national inventory reporting, reporters to the GHGRP are required to report CO_2 emissions from biomass combustion. However, these emissions are listed separately and not included in the emission totals. This explicit reporting of CO_2 emissions from biomass-based combustion has the benefits of:

- reminding reporters that these emissions need to be reported internationally;
- ensuring that CO_2 emissions from biomass are currently not counted in the totals; and
- demonstrating the quantity of atmospheric CO_2 loading that could be offset by biomass growth.

On the other hand, as is required under the IPCC Guidelines, facilities must report **and** count CH_4 and N_2O emissions from biomass combustion. There is no reverse, biogenic mechanism by which replacement biomass removes these emissions from the atmosphere. Therefore, they must be included in the GHG totals in the same way as for CH_4 and N_2O emissions from any other material combusted.

It follows that CO_2 emissions from the **biomass portion** of waste that may be incinerated on site are to be reported separately but are **not** counted in the emission totals. See Section 4.2.9 for more details.

3.3.2 Non-combustion of Biomass

Under the GHGRP, emissions from the decomposition of biomass in waste and wastewater must be reported. Reported and counted emissions should include CH_4 and N_2O. Aerobic decomposition of biomass in waste can emit substantial quantities of CO_2, but these emissions need not be reported.

Reporting facilities will find additional details in Section 4.2.9 on how to handle emissions from biomass.

3.4 Review and Verification

Environment Canada reviews the information submitted by facilities and conducts a number of data quality checks of the submitted data for compliance purposes and for completeness. Environment Canada also follows up with individual facilities if there are any clarifications needed regarding their data. Reporters are required to keep copies of the requested information, together with any calculations, measurements and other data on which the information is based, at the facility to which it relates or at that facility's parent company, located in Canada. All information must be kept for a period of three years from the date the report must be submitted.

Reporters are also required to submit a Statement of Certification, signed by an authorized signing officer, stating that the information submitted is true, accurate and complete.

Companies that meet reporting requirements but fail to report, fail to report on time, or knowingly submit false or misleading information, face penalties as listed under sections 272 and 273 of CEPA 1999. Facilities that did not meet the reporting criteria in previous years should review their status to determine whether they are required to report for the current reporting year.

Currently, there are no specific requirements for a facility to have its emissions verified by a third party. The information reported by a facility should nevertheless be verifiable, which means that any information that would allow a facility's emissions to be verified by the government or a third party certified by the government to carry out such verifications should be retained. Facilities can choose to have their emissions verified by a third party if they wish.

4 EMISSIONS REPORTING FORMAT

4.1 Reporting Emissions Data

Environment Canada's online single-window reporting tool is available for reporting facilities to submit their GHG emissions information to Environment Canada. To enter GHG emissions data, the reporter will input numerical values (in units of tonnes) for the emission sources occurring at the facility. The quantity of emissions in CO_2 eq units will be automatically calculated by the online reporting system.

A "not applicable" (N/A) box will be available for each emission source category and gas listed, and the reporter may select this box only in those cases where:

- the emission source or emission type does not occur at the facility; or
- the emissions from a given source are not estimated due to the unavailability of data.

If a reporter has calculated the emissions for a given category or gas type and the emissions are zero, the reporter should enter the digit "0" in the relevant numeric field.

The reporting facility needs to calculate and report its direct emissions of the three gases CO_2, CH_4 and N_2O individually. When reporting these emissions, the reporter is required to disaggregate the emissions by the following source categories:

- Stationary Fuel Combustion
- Industrial Process
- Venting
- Flaring
- Fugitive
- On-site Transportation
- Waste
- Wastewater

The reporting facility also needs to calculate and report its direct emissions of HFCs, PFCs and SF_6 from industrial processes and industrial product use, by individual gas species. A graphical representation of the GHGs to be reported under the GHGRP is presented in Table 2.

4.2 Carbon Dioxide, Methane and Nitrous Oxide Emissions

CO_2, CH_4 and N_2O are reported individually, by source category. Additional information on each of these categories is provided in the following subsections.

4.2.1 Stationary Fuel Combustion Emissions

Most facilities will have some form of stationary combustion. This category includes emissions from non-vehicular combustion sources occurring at the facility, where the fuel is burned for the purpose of producing energy (e.g., to generate electricity, heat or steam). It includes external (e.g., boilers, air handling units) and internal (e.g., emergency generators, cogeneration turbines) combustion sources. On-site waste incineration is also included if the waste is combusted for energy. Emissions from waste incineration used as a disposal method are included under the Waste Emissions category (see Section 4.2.7).

Note: If biomass is being combusted for the purposes of creating energy, CH_4 and N_2O emissions should be reported under Stationary Fuel Combustion Emissions. The CO_2 emissions should be reported under Biomass Combustion Emissions (see Section 4.2.9).

4.2.2 Industrial Process Emissions

This category refers to emissions from an industrial process involving chemical or physical reactions other

Table 2: Greenhouse Gases to Be Reported by Facilities and Source Categories

	Source Categories								
Gas	Stationary Fuel Combustion	Industrial Process	Venting	Flaring	Fugitive	On-site Transportation	Waste	Wastewater	Gas Total
CO_2[1]	•	•	•	•	•	•	•	•	❑
CH_4	•	•	•	•	•	•	•	•	❑
N_2O	•	•	•	•	•	•	•	•	❑
HFCs[2]		•							❑
PFCs[2]		•							❑
SF_6[3]		•							❑
Facility Total Emissions									❑

Notes:
1. CO_2 from biomass combustion is collected but not included in the facility total or threshold calculations.
2. Total for each species identifed from industrial processes and industrial product use.
3. Total from industrial process and industrial product use.

• Emissions to be reported.
❑ Emissions to be published.

than combustion and where the primary purpose of the industrial process is not energy production. Examples of industrial process emissions include mineral production (e.g., cement, lime), metal production (e.g., iron and steel, aluminium) and chemical production (e.g., adipic acid, nitric acid).

This category of emissions is expected to be unique to specific sectors and to specific facilities in a given sector, depending on the operations performed at the facility.

Note: In instances where industrial process emissions are produced in combination with emissions from fuel combusted for energy purposes, the emissions are to be separated and categorized accordingly. Emissions produced for energy purposes (i.e., fuel combusted to use the heat released) are included under Stationary Fuel Combustion Emissions, whereas industrial process emissions are included under Industrial Process Emissions. The reduction of iron in a blast furnace through the oxidation of coke is an example where it may be confusing to categorize a particular emission as energy or industrial. Invariably, the heat released is used within the process or for other energy needs; however, in this case, since the primary purpose of coke oxidation is to produce pig iron, the emissions are categorized as Industrial Process Emissions.[7]

4.2.3 Venting Emissions

Venting emissions are defined as the controlled release of a waste gas to the atmosphere. These include, but are not limited to, releases of casing gas, a gas associated with a liquid (or solution gas), treater, stabilizer or dehydrator off-gas, blanket gas and releases from pneumatic devices that use natural gas as a driver, and from compressor start-ups, pipelines and other blowdowns, and metering and regulation station control loops.

In general, venting emissions are a result of the handling or processing of fuel in the fossil fuel industries.

4.2.4 Flaring Emissions

Flaring emissions are defined as controlled releases of gases from industrial activities from the combustion of a gas and/or liquid stream produced at a facility not for the purpose of producing energy. They may arise from waste petroleum incineration, hazardous emission prevention systems (whether in pilot or active mode), well testing, natural gas gathering systems, natural gas processing plant operations, crude oil production, pipeline operations, petroleum refining as well as chemical fertilizer and steel production.

In general, flaring emissions are a result of the handling or processing of fuel in the fossil fuel industries.

Note: Flaring of landfill gas should be accounted for under the Waste Emissions category (see Section 4.2.7).

4.2.5 Fugitive Emissions

Fugitive emissions are defined as uncontrolled releases of gases from industrial activities, other than releases that are Venting Emissions or Flaring Emissions as described above. In the case of fossil fuel industries, fugitive emissions include releases resulting from the production, processing, transmission, storage and use of solid, liquid or gaseous fuels. Examples include leakage from natural gas transmission lines and processing plants, accidental releases from oil and gas wells, and releases from the mining and handling of coal.

In general, fugitive emissions are a result of the handling or processing of fuel in the fossil fuel industries.

Note: The release of landfill gases are to be reported under Waste Emissions.

4.2.6 On-site Transportation Emissions

This category refers to any direct releases of CO_2, CH_4 and N_2O resulting from fuel combustion in machinery used for the on-site (i.e., at the facility) transportation of substances, materials or products used in the production process. Examples of such activities may include:

7 This categorization of emissions is in accordance with that provided by the IPCC. Source: *2006 IPCC Guidelines for National Greenhouse Gas Inventories*, Volume 3, p. 5.5.

- equipment used at a steel mill to move molten metal to different stages in the steel production process;
- equipment used at oil sands operations to mine and/or move oil sand or other materials to subsequent on-site processes (e.g., crushing, extraction); and
- equipment used at above- or below-ground mining operations to mine and/or move mined materials or other intermediate products or materials to different on-site production processes.

4.2.7 Waste Emissions

This category of emissions refers to releases that result from waste disposal sources at a facility. This includes landfilling of solid waste, flaring of landfill gas and waste incineration. GHG emissions from waste-to-energy conversion, where waste material is used directly as fuel or converted into fuel, must be calculated and reported under Stationary Fuel Combustion Emissions. There are emissions of CO_2, CH_4 and N_2O from waste disposal, and special consideration is necessary for CO_2 emissions originating from biomass materials in waste (see Section 4.2.9).

4.2.8 Wastewater Emissions

This category of emissions refers to releases that result from wastewater and wastewater treatment at a facility. Wastewater treatment processes (aerobic and anaerobic) typically result in emissions of CH_4 and N_2O, and these emissions are reported under this category. CO_2 is also a product of aerobic and anaerobic wastewater treatment. However, as described in Section 4.2.9, these emissions should not be reported.

In general, closed underground sewers are not considered a significant source of CH_4 or N_2O.

GHG emissions from wastewater treatment plants or processes will vary based on the type of influent (municipal vs. industrial wastewater), volume of influent and the specific treatment processes used. If CH_4 from an anaerobic digestion process is collected and combusted for energy, it should be reported under Stationary Fuel Combustion Emissions. Advanced treatment plants with nutrient removal (i.e., nitrification and denitrification) represent a small but distinct source of N_2O.

Much of the N_2O that leaves a wastewater treatment plant in the liquid effluent stream is eventually released to the atmosphere and does represent a significant source of GHGs, but wastewater treatment facilities are not required to report this type of delayed-flux emission from effluent.

4.2.9 CO_2 Emissios from Biomass

(i) CO_2 Emissions from Combustion of Biomass

The facility may use biomass materials as a fuel source in its on-site combustion processes. The reporting facility must report the CO_2 emissions from the combustion of biomass fuels under CO_2 Biomass Combustion Emissions, and these should not be included in the emission totals for the facility. Any CH_4 and N_2O emissions should be reported under either Stationary Fuel Combustion Emissions if the biomass is being burned to create energy, or under Waste Emissions in the case of waste incineration and landfill gas flaring processes, and these emissions must be included in the facility totals.

Similarly, for waste incineration processes that may occur at the facility, the waste stream may be composed of organic (or biomass) materials and fossil fuel–based carbon materials (e.g., plastics, rubber, liquid solvents, waste oil). The CO_2 emissions from the biomass portion being incinerated should be reported separately in the GHG report (and not included in the CO_2 emission totals), whereas the CO_2 emissions resulting from incineration of the fossil fuel–based fraction must be included in the facility totals.

As a further example of combustion of biomass materials, in the case of flaring of landfill gas, the CO_2 emissions produced from this combustion process should be reported separately in the reporting tool and not included in the emission totals, since landfill gas is considered a product stemming from the biodegradation of biomass material.

(ii) CO_2 Emissions from Non-combustion of Biomass

Waste disposal and wastewater treatment processes can produce CO_2 emissions, a result of aerobic decomposition of biomass material in the waste or wastewater stream. The reporter is not required to report these CO_2 emissions;

however, emissions of CH_4 and N_2O resulting from decomposition must be reported in the Waste or Wastewater categories.

4.3 Hydrofluorocarbon, Perfluorocarbon and Sulphur Hexafluoride Emissions

The reporting facility also needs to calculate and report its direct emissions of the HFC and PFC gas species listed in Table 1, and the gas SF_6, if the facility emits these GHGs from industrial processes and industrial product use.

HFC, PFC and SF_6 emissions from **industrial processes** are described as emissions resulting from a chemical or physical transforming of material, such as HFCs and PFCs used as foam-blowing agents and PFC emissions from anode effects in primary aluminium smelting.

Industrial product use means the use of a product for an industrial process that does not react in the process, such as SF_6 and HFCs used in the magnesium industry as a cover gas. Use of SF_6 in electrical equipment (e.g., gas-insulated switchgears, circuit breakers) is also considered an industrial product use.

The following subsections provide additional detail on these GHGs and possible sources of such emissions.

4.3.1 Hydrofluorocarbons

(i) Overview

HFCs are a series of synthetic gases containing carbon, hydrogen and fluorine (see Table 1 for a listing of individual HFC species). While HFCs are emitted in small quantities, they have disproportionate effects as a result of long atmospheric lifetimes, which in turn lead to large GWPs. The HFC species have 100-year GWPs ranging from 92 to as high as 14 800 (IPCC, 2006). The use of HFCs is expected to grow substantially as a result of the phasing out of various ozone-depleting substances (IPCC, 2006). HFCs are not included under the Montreal Protocol because they are not considered to be ozone-depleting substances.

(ii) Sources

The main sources of HFC emissions from industrial processes and industrial product use include emissions arising from foam blowing and the use of HFCs as a cover gas in metal production.

Emissions of HFCs from other applications, such as refrigeration, air conditioning, propellants in aerosols, fire extinguishers and solvents, are not considered industrial process or industrial product use emissions under the GHGRP and therefore should not be reported.

4.3.2 Perfluorocarbons

(i) Overview

PFCs are a family of industrial gases, and they should be reported by individual PFC gas species (see Table 1). Emissions of PFCs are relatively low by mass; however, they are potent GHGs, with 100-year GWPs ranging between 7 390 and 12 200 (IPCC, 2006). PFCs are not ozone-depleting substances, so they are not included under the Montreal Protocol.

(ii) Sources

The main sources of PFC emissions from industrial processes and industrial product use are attributed to two areas: aluminium production and foam blowing. PFC emissions are an undesirable by-product of aluminium production, while PFCs are purchased and used as foam-blowing agents.

Emissions of PFCs from other applications, such as refrigeration, air conditioning, semiconductor manufacturing, solvents, aerosols and fire extinguishing, are not considered industrial process or industrial product use emissions under the GHGRP and therefore should not be reported.

4.3.3 Sulphur Hexafluoride

(i) Overview

SF_6 is a synthetic gas with chemical properties that render it relatively inert, which makes it a preferred choice in various industrial applications. It is a particularly potent GHG,

with a 100-year GWP of 22 800 and an estimated lifetime of about 3 200 years (IPCC, 2006).

(ii) Sources

The main sources of SF_6 emissions from industrial processes and industrial product use include SF_6 used as a cover gas in magnesium smelting and casting as well as for special foundry products in the aluminium industry. Use of SF_6 as an insulating gas in electrical equipment (e.g., gas-insulated switchgear, circuit breakers) is also considered as an industrial product use.

Emissions of SF_6 from other applications, such as fire suppression and explosion protection, leak detection and various electronic applications, are not considered industrial process or industrial product use emissions under the GHGRP and therefore should not be reported.

4.4 Estimation Methods

The reporting facility must identify and report the type of estimation method or methods used to determine the quantities of emissions reported. Such methods include monitoring or direct measurement, mass balance, emission factors and engineering estimates. These are defined below.

Monitoring or Direct Measurement:
This type of method may involve continuous emission monitoring systems (i.e., emissions recorded over an extended and uninterrupted period), predictive emission monitoring (correlations developed between measured emission rates and process parameters) or source testing (e.g., stack sampling).

Mass Balance:
This type of method involves the application of the law of conservation of mass to a facility, process or piece of equipment. Emissions are determined from the difference in the input and output of a unit operation where the accumulation and depletion of a substance are included in the calculations.

Emission Factors:
This method uses emission factors (EF) to estimate the rate at which a pollutant is released into the atmosphere (or captured) as a result of some process activity or unit throughput. The EFs used may be average or general EFs, or technology-specific EFs.

Engineering Estimates:
This type of method may involve estimating emissions based on engineering principles and judgment, using knowledge of the chemical and physical processes involved, the design features of the source, and an understanding of the applicable physical and chemical laws.

Reporters are reminded of the legal requirement to keep copies of the information submitted, together with any calculations, measurements and other data on which the information is based, for a minimum period of three years from the date the information must be submitted.

Currently, there are no specific protocols to define how reporters must calculate their GHG emissions. However, reporters must use methods that are consistent with the methodologies approved by the UNFCCC and developed by the IPCC. Refer to sections 3.1–3.3 for background information and a more complete description of the flexibility allotted to reporters in their estimation procedures. Facilities can also refer to Annexes 2, 3 and 8 of Part 2 of the National Inventory Report to obtain detailed explanations of estimation methodologies and emission factors used by Environment Canada in the development of the estimates.

For further details on the IPCC methodologies, reporters should refer to Table 3, which presents specific references to the relevant sections of the 2006 IPCC Guidelines for the emission sources subject to reporting (these documents are available at the following link: www.ipcc-nggip.iges.or.jp/public/2006gl/index.html).

Table 3: Reference to Methodological Guidance in the 2006 IPCC Guidelines, by Emission Source

Emission Source Category	2006 IPCC Guidelines
CO_2, CH_4, N_2O	
Stationary Fuel Combustion	Volume 2 (Energy), Chapter 2 (Stationary Combustion), pages 2.1–2.47
Industrial Process	Volume 3 (Industrial Process and Product Use), Chapters 1–8
Venting	Volume 2 (Energy), Chapter 4 (Fugitive Emissions), pages 2.1–2.47
Flaring	Volume 2 (Energy), Chapter 4 (Fugitive Emissions), pages 2.1–2.47
Fugitive	Volume 2 (Energy), Chapter 4 (Fugitive Emissions), pages 2.1–2.47
Waste	Volume 5 (Waste), Chapters 1–5
Wastewater	Volume 5 (Waste), Chapter 6 (Wastewater Treatment and Discharge), pages 6.1–6.28
On-site Transportation	Volume 2 (Energy), Chapter 3 (Mobile Combustion), pages 3.1–3.78
HFCs, PFCs, SF_6	
HFCs	Various chapters, including: • Volume 3 (Industrial Process and Product Use), Chapter 3 (Chemical Industry Emissions), pages 3.70–3.94 • Volume 3 (Industrial Process and Product Use), Chapter 7 (Emissions of Fluorinated Substitutes for Ozone Depleting Substances), pages 7.1–7.71
PFCs	Various chapters, including: • Volume 3 (Industrial Process and Product Use), Chapter 4 (Metal Industry Emissions), pages 4.1–4.85 • Volume 3 (Industrial Process and Product Use), Chapter 7 (Emissions of Fluorinated Substitutes for Ozone Depleting Substances), pages 7.1–7.71 • Volume 3 (Industrial Process and Product Use), Chapter 8 (Other Product Manufacture and Use), pages 8.1–8.43
SF_6	Various chapters, including: • Volume 3 (Industrial Process and Product Use), Chapter 4 (Metal Industry Emissions), pages 4.1–4.85 • Volume 3 (Industrial Process and Product Use), Chapter 8 (Other Product Manufacture and Use), pages 8.1–8.43

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GENERAL

Q1 ***How many facilities are affected by mandatory greenhouse gas (GHG) reporting? What sort of facilities are these?***

Only those facilities that emit the equivalent of 50 000 tonnes (50 kt) or more of carbon dioxide (in CO_2 equivalent units, or CO_2 eq) per year are required to report. This threshold is expected to apply to over 500 facilities across Canada, in all sectors. Facilities that do not meet the reporting threshold are encouraged to report voluntarily.

Major industrial facilities that produce electricity, heat or steam on site using fossil fuels are those that would typically emit more than 50 kt of GHGs per year. These could include power generation facilities, integrated steel mills, facilities involved in smelting and refining metals, petroleum refineries, and chemical production facilities. Other operations, such as large landfills and incinerators, could also be subject to this mandatory reporting.

Q2 ***What constitutes 50 kt of CO_2 eq?***

The following examples are given to provide context for the magnitude of this threshold. See Section 4 for further information regarding how to quantify your emissions.

- A commercial or institutional facility combusting natural gas for heat or process use in furnaces or boilers with a combined maximum heat input of 115 million kilojoules/hr (109 million BTU/hr), operating at full capacity, 24 hours per day, 7 days per week, for one year would meet the threshold.
- The production of 17 159 tonnes of nitric acid in a "Type 1" dual-pressure plant with extended absorption would meet the threshold.
- The production of 32 051 tonnes of ammonia using the natural gas reforming process to produce hydrogen would meet the threshold.
- The combustion of 17.9 million litres of diesel fuel in one year in stationary sources such as diesel generators would meet the threshold.

Q3 ***Why did the Global Warming Potential (GWP) values change in 2013, and what does it mean for reporters?***

Since 2013, the GWP values from the Intergovernmental Panel on Climate Change (IPCC) 4th assessment report are now required to be used by facilities to assess whether they meet the 50-kt CO_2 eq reporting threshold. The use of the latest GWP values is important to ensure that the facility-level GHG reporting occurring through the GHGRP aligns with the revised United Nations Framework Convention on Climate Change (UNFCCC) GHG reporting requirements and with expected changes to occur within Canada's National Greenhouse Gas Inventory. Canada's National Greenhouse Gas Inventory Report (NIR), which is annually submitted to the UNFCCC, is planning on using the updated GWP values in the 2015 submission for reporting 2013 emissions and removals. The use of the updated GWP values will also promote consistency with other GHG reporting initiatives (e.g., annual facility-level GHG reporting required by the United States Environmental Protection Agency).

Q4 ***The reporting threshold under Environment Canada's GHG Emissions Reporting Program (GHGRP) is 50 kt or more of GHG emissions, in CO_2 eq units. What are the reporting thresholds in other Canadian jurisdictions?***

A number of provinces have GHG reporting programs, each specifying their own reporting requirements, including reporting thresholds. For example, the reporting threshold for Alberta is set at 50 kt (for its *Specified Gas Reporting Regulation*), Ontario at 25 kt, and British Columbia, Quebec and Nova Scotia are at 10 kt. It is the facility's responsibility to understand the various GHG reporting obligations and to determine whether a GHG report is required to be submitted to the federal and/or provincial jurisdictions. Particular

Q4 (cont'd) attention should be given to the use of GWP values that may be required under provincial GHG reporting obligations, given that the GHGRP has incorporated the updated values, starting with the 2013 data year, and provinces may or may not use the updated GWPs.

Q5 ***Are landfills and incinerators included in the mandatory GHG reporting requirements for emissions?***

Any facility that emits more than 50 kt of CO_2 eq in the calendar year must report. Landfills and incinerators fall within the definition of "facility." (See the Waste category in Section 4.2.7 for details.)

Q6 ***When can I submit the required information for this year's emissions? Can I send the information before June 1st?***

The information will be collected electronically through Environment Canada's Single Window System. The system is normally ready to collect data submissions by the spring of each year; therefore reporters are able to submit their information well in advance of the June 1st reporting deadline. Details regarding the online reporting tool are available on Environment Canada's GHG website (www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=F3E7B38E-1).

Q7 ***Will the reported data be verified for accuracy?***

Facilities must ensure that the data they submit is accurate. Reporters are required to submit a Statement of Certification, signed by an authorized official, stating that the information contained in the attached emission report is true, accurate and complete.

Reporters also have a legal obligation to keep copies of the information submitted, along with any calculations, measurements and other data on which the information is based. All information must be kept for a period of three years from the date the information was reported to Environment Canada.

Environment Canada reviews the submitted information and conducts a number of checks for compliance purposes and for completeness. Clarifications may be sought from individual facilities where necessary.

Q8 ***Are there penalties for not reporting, late submission or faulty reporting?***

All persons who operate a facility that is subject to the GHG reporting requirements outlined in the *Canada Gazette* notice under the authority of the *Canadian Environmental Protection Act, 1999* (CEPA 1999) are legally obligated to provide whatever information is required by the notice. Any person in contravention of CEPA 1999 by failing to report, late submission or faulty reporting will be referred to enforcement staff and may be subject to enforcement action. Further information on enforcement and compliance under CEPA 1999 can be found online at www.ec.gc.ca/lcpe-cepa (see Enforcement and Compliance).

Q9 ***Who must report emissions if a facility underwent a change of operator during the calendar year?***

If a person who operates a facility that is subject to the reporting requirements changes during the calendar year, then the person operating the facility, as of December 31st of that calendar year, must report for the entire calendar year.

Q10 ***Do emissions need to be reported if a facility closed during the calendar year?***

If operations at a facility are terminated in any calendar year, the last operator of that facility is required to report for the portion of the calendar year during which the facility was in operation (if the facility emissions meet the reporting threshold requirement). The last operator should inform the Pollutant Inventories and Reporting Division about the status of the facility to avoid further follow-up.

Q11 ***If the parent company of a facility is not Canadian, does the facility need to report?***

If the facility is located in Canada and exceeds the reporting threshold, then the operator is required to submit a report for the facility. The operator would not, however, be required to provide parent company information if there is no Canadian parent company.

Q12 ***Will you be offering any type of training sessions and/or workshops for GHG reporters?***

Environment Canada's GHG website (www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=F3E7B38E-1) offers guidance on the reporting requirements and the online reporting tool. Environment Canada has held GHG reporting information sessions in previous reporting cycles (e.g., webex), and communications will be sent out to facility contacts currently on the GHGRP's distribution list if similar sessions are held from one reporting year to the next.

If you wish to be added to the GHGRP's distribution list, you can send a request by email to ges-ghg@ec.gc.ca.

Q13 ***What is the D-U-N-S number?***

D-U-N-S numbers are unique nine-digit identification sequences that provide unique identifiers of single business entities while linking corporate family structures together. The internationally recognized numbering system is developed and maintained by the private firm of D&B (formerly Dun and Bradstreet).

D&B links the D-U-N-S numbers of parents, subsidiaries, headquarters and branches of more than 62 million corporate family members around the world. Used by the world's most influential standards-setting organizations, the D-U-N-S number is recognized, recommended and/or required by more than 50 global, industry and trade associations, including the United Nations, the U.S. federal government, the Australian government and the European Commission.

If a facility or company does not have a D-U-N-S number, it is not required to get one in order to submit an emissions report.

Q14 ***What is a Statement of Certification?***

A Statement of Certification is a statement or confirmation signed by an authorized signing officer of the reporting company, indicating that the information submitted in response to the GHG reporting requirements is true, accurate and complete.

Q15 ***Who must sign the Statement of Certification on behalf of a reporting facility?***

The reporting facility may designate anyone within its organization to sign, provided that the individual has delegated powers to accept legal responsibility for the information provided and is in a position to knowledgeably attest to the completeness and accuracy of the submitted report. Facilities may, for example, designate the chief executive officer, the environmental coordinator or the plant manager to certify the report. The authorized signing officer must certify the GHG emissions report electronically at the time of report submission through the online reporting tool.

Q16 ***Since the* Canada Gazette *notice on reporting requirements does not prescribe a specific mandatory protocol or methodology for estimation or quantification of GHG emissions, what is the need for a Statement of Certification by an officer of the reporting facility?***

There are two important reasons for the required certification:

1. To provide assurance, from a suitable representative of the reporting facility, that the facility has complied with the reporting requirements. In signing, the officer is attesting that:
   - he or she has reviewed the submitted report and any supporting documents;
   - he or she has exercised due diligence to ensure that the information provided is true and complete; and
   - to the best of the signing officer's knowledge, the amounts and values provided in the report are accurate, based on reasonable estimates using available data and quantification methodology chosen by the reporting facility.
2. To provide a reasonable degree of openness, transparency and visible accountability in the reporting process and, in so doing, to ensure a high degree of public and stakeholder confidence in the integrity of the reporting system and the results obtained.

Q17 ***What are the requirements for the retention of records?***

The *Canada Gazette* notice indicates that records must be maintained for a period of three years from the date the information must be submitted.

Q18 ***Will I receive any feedback on my report?***

Individual feedback to reporters will not normally be provided (unless clarification is needed on specific information that was reported). However, appropriate government authorities will respond to specific requests for information.

For questions about the GHGRP, please contact:

Pollutant Inventories and Reporting Division
Environment Canada
200 Sacré-Coeur Boulevard, 10th floor
Gatineau QC K1A 0H3
Telephone: 819-938-3258 or toll-free at: 1-877-877-8375
Fax: 819-938-3273
Email: ges-ghg@ec.gc.ca

Provincial partners using the Single Window System for GHG reporting include Alberta, British Columbia and Ontario.

For assistance with Government of Alberta GHG reporting requirements, please contact the Alberta Environment and Sustainable Resource Development's GHG Reporting Program at aenv.ghg@gov.ab.ca or the Alberta Environment and Sustainable Resource Development's Climate Change policy unit at 780-427-5200.

For assistance with the Government of British Columbia GHG reporting requirements, please contact the British Columbia Ministry of Environment at GHGReporting@gov.bc.ca or at 250-356-7286.

For assistance with the Government of Ontario GHG reporting requirements, please contact the Ontario Ministry of Environment at GHGReporting@ontario.ca or at 416-649-4480 or 1-855-815-6400.

TECHNICAL INFORMATION

Q19 ***How are GHG emissions calculated by reporting facilities?***

There are a number of methods that a facility may choose to use to calculate its GHG emissions. These include monitoring and direct measurement, mass balance, emissions factors, and engineering estimates. Reporting facilities must use methods for estimating emissions that are consistent with the reporting guidelines adopted by the UNFCCC and developed by the IPCC (see Section 4.4).

Q20 ***Will any guidelines be issued on the estimation of GHG emissions for the reporting year?***

There are no specific protocols developed for estimating GHG emissions that facilities must use; however, guidance is provided to assist reporters in categorizing emissions and in using the UNFCCC guidelines. This technical guidance document is designed to help potential reporters determine if they are required to submit a report. It also includes technical information related to GHG emissions to be reported and the required reporting format.

Help desk support is also available to facilities that may have questions on how to calculate their GHG emissions (see Q18).

Q21 ***If a reporting emitter adopts estimation or quantification protocols for future years that are different from those used in Phase 1, and if the resulting estimates of emissions differ significantly, how will the differing results be handled?***

The purpose behind the phased approach to the development of the full domestic reporting system is to develop, test, assess and refine all aspects of reporting, including estimation and quantification protocols and methodologies. Until suitable methodologies and protocols are finalized, variations in results can be expected if there are changes in selected methodologies from one year to the next. It is important to recall that, as per the *Canada Gazette* notice, reporters must keep copies of the required information, together with any calculations, measurements and other data on which the information is based. For transparency, facilities should also identify in their GHG reports reasons behind emission changes from one year to the next, including methodological changes.

Q22 ***When reporting GHG emissions, is the requirement to report as a CO_2 eq or the actual tonnage of each gas? For example, would I report 100 tonnes of N_2O or 29 800 tonnes of CO_2 eq units for N_2O?***

The reporter will be required to report the emissions of each individual GHG type, expressed in units of tonnes for each. For the example listed above, the reporter would report 100 tonnes of N_2O.

Please note, however, that when a potential reporter is assessing whether he or she needs to submit a report, he or she will need to convert the emissions to CO_2 eq units to compare them with the reporting threshold. The CO_2 eq value is how much CO_2 would be required to produce a similar warming effect, and it is calculated by multiplying the amount of the gas by an associated GWP. See Section 2.2 for a complete list of the GWPs for each GHG.

If the facility meets or exceeds the reporting threshold of 50 kt of CO_2 eq for this year, emissions for that facility must be reported.

Q23 ***Why does the pipeline definition refer to "pipeline transportation system," while the definition used for other emissions-reporting purposes in the National Pollutant Release Inventory (NPRI) refers to "pipeline installation"?***

A pipeline is considered a mode of transport. For GHG reporting purposes, the concern is with both point-source emissions associated with stationary combustion sources such as compressors at pipeline installations as well as fugitive emissions along the length of the entire pipeline system. A natural gas transmission company that has several pipeline operations or networks within and across several provinces should use the provincial boundaries to identify its "pipeline transportation systems" and then report GHG emissions for each discrete system.

Q24 ***I have a facility that is a pipeline transportation system. What should I enter as the location of this facility?***

The location of a pipeline transportation system can be defined as the location of the largest unit in the system. Alternatively, you could define the location of the facility as the point where the boundary coincides with the point of entry or start of the pipeline system. A description of the extent of the pipeline system and an indication of nearby cities or towns would also be helpful in locating such a facility. Once a location has been selected for the first year of reporting, it is important that it be kept constant in subsequent years (unless it no longer applies for some reason). Similarly, the explanations above apply to facilities other than pipeline transportation systems that are spread out over large areas.

Note: The new requirement for latitude and longitude information is not mandatory for pipeline transportation systems, although this information can be provided along with other location details (in particular, if the reporter uses the location of the largest unit in the system to describe the location of the pipeline system).

Q25 ***Can you tell me more about the new requirement for facilities to provide the latitude and longitude coordinates of the facility and how such information should be entered online for the report?***

Since 2013, the *Canada Gazette* notice (requiring the reporting of GHG emissions from facilities for the specified year) has included the requirement that all facilities except pipeline transportation systems provide their latitude and longitude information. The majority of facilities already provide this information to Environment Canada as part of their NPRI reports during their first year of reporting. The latitude and longitude information will be used by Environment Canada to more precisely determine the location of the facilities and will enhance existing departmental public reporting on this facility-level GHG information (i.e., mapping of facilities). The reporter is to provide the latitude and longitude under the Geographical Address tab for the facility in the Single Window Information Manager of the Single Window System.

Q26 ***What should be entered as the location of an offshore installation?***

Offshore installations must be specified using latitudinal and longitudinal coordinates.

Q27 ***How does the presence on site of a cogeneration unit influence emissions reporting? What if I am not the operator of the cogeneration unit?***

If there is a cogeneration unit located on site at your facility and it generates direct GHG emissions, these emissions are to be reported. The emissions are to be categorized under Stationary Fuel Combustion, since cogeneration units produce energy (typically of at least two forms). Total direct GHG emissions must be reported, even if some of the resultant energy is exported off site. If the operator of the cogeneration unit is different from the operator of the overall facility, a separate report must be submitted by the operator of the cogeneration unit (if the reporting threshold is reached).

Q28 ***Do emissions related to space heaters need to be reported?***

Yes, reporters are required to include emissions from space heaters utilizing combustion (i.e., burning fuel), and these emissions are to be included as part of the total under the Stationary Fuel Combustion category (unless the fuel burned is a biomass material, in which case special consideration is necessary for the CO_2 emissions; see Section 4.2.9).

Q29 ***Am I required to report emissions from the combustion of biomass?***

Yes, it is necessary to calculate and report the quantity of emissions of CH_4 and N_2O from the combustion of biomass materials. This includes emissions resulting from biomass burned for any purpose except land clearing (see note below). The CO_2 emissions from biomass combustion must be calculated and reported separately in the reporting tool. These CO_2 emissions should not be included as part of the total emissions from the facility. However, the CH_4 and N_2O emissions are to be included in the emission totals. The following materials are considered to be biomass materials:

- plants or plant materials, animal waste, or any product made of either of these;
- wood and wood products, charcoal and agricultural residues and wastes (including organic matter such as trees, crops, grasses, tree litter or roots);
- that portion of biologically derived organic matter in municipal and industrial wastes (this would include wastewater treatment sludge from pulp and paper plants). It is important to note that only the biomass portion of industrial or municipal waste should be included in this category. If the portion derived from fossil fuels is combusted, the emissions from this portion must follow the rules for non-biomass-based sources;
- bio-alcohols;
- black liquor;
- landfill gas;
- sludge gas; and
- animal- or plant-derived oils.

Note: Occasionally, tree stumps, branches, twigs and leaves are burned on site as land is cleared. The GHGs emitted (CO_2, CH_4 and N_2O) from this activity should not be reported.

Q30 ***If most of the CO_2 emissions from my facility are from the burning/combustion of natural gas in the boilers and furnaces, do they count as "CO_2 emissions from the combustion of biomass"?***

Standard commercial natural gas is a fossil fuel and hence does not fall into the category of biomass fuels. Thus, all GHG emissions from the combustion of commercial natural gas (e.g., CO_2, CH_4 and N_2O) must be reported and counted in emission totals or when assessing whether a facility meets the reporting threshold.

Only specialized, biomass-derived gas (e.g., CH_4 produced from a digester or landfill and usually used on site) would be considered a biomass fuel. (CO_2 emissions from the combustion of biomass materials are not included in Stationary Fuel Combustion totals, as it is assumed that the biomass is produced in a sustainable manner.)

Q31 ***How are emissions from electricity consumption reported by a facility?***

Reporters are required to report on direct GHG emissions only from sources occurring at the facility. For electricity that may be generated on site, total GHG emissions resulting from the generation of this electricity should be reported even if some of the resultant electricity is exported off site. The indirect emissions associated with the import of electricity (not generated on site) should not be reported.

Q32 ***Where should CO_2 emissions from natural gas sweetening be reported in terms of categorization?***

CO_2 released as a result of processing, such as the sweetening of natural gas, should be reported in the Venting Emissions category.

Q33 ***Do I need to report transportation emissions?***

As stated in the *Canada Gazette* notice, on-site transportation emissions must be reported under their own category. Only emissions from machinery used for the on-site transportation of substances, materials or products used in the production process of the facility should be reported. As an example, the transport of feed materials (e.g., by truck or rail) from their on-site storage location to a specific process unit would be reported under this category. An example of a transportation activity that would not be reported would be a manager who uses a company vehicle (e.g., pickup truck or car) to conduct inspections of activities on the grounds of the facility. Additionally, emissions from transportation to and from the facility should not be reported.

Q34 ***How do I submit my GHG information to Environment Canada?***

You can submit your facility's GHG information to Environment Canada's GHGRP through Environment Canada's Single Window System. This system is an online mechanism for reporting information to Environment Canada under specific programs and to other agencies and jurisdictions, including:

- Environment Canada's NPRI program
- Alberta's *Specified Gas Reporting Regulation* (AB Reg. 251/2004)
- British Columbia's GHG *Reporting Regulation* (B.C. Reg. 272/2009)
- Ontario's *Greenhouse Gas Emissions Reporting Regulation* (O. Reg. 452/09)

Visit our website (www.ec.gc.ca/ges-ghg) to find a link to the reporting system and more information on how to access the system.

PUBLICATION AND CONFIDENTIALITY OF DATA

Q35 *What is this facility-level data used for? Is it part of the data for Canada's National Greenhouse Gas Inventory that is submitted annually to the United Nations?*

The facility data collected under the GHGRP supports a number of objectives, including providing Canadians with information on GHG emissions, assisting with regulatory development, and supporting the development of the National Greenhouse Gas Inventory that Canada must prepare and submit annually to the United Nations under the UNFCCC.

Canada's National Greenhouse Gas Inventory is broader than industrial sources, as it includes all sources and sinks of GHGs caused by human activity. The inventory is largely based on emission estimates developed from national and provincial statistics. The facility data is used to compare and validate the national inventory estimates from industrial sources.

Q36 *Will the information I provide to Environment Canada be kept confidential?*

The information is being collected by Environment Canada, under the authority of CEPA 1999. The Minister of the Environment has indicated the intent to publish the GHG emission totals by gas and by facility (pursuant to the *Canada Gazette* notice).

Persons will be afforded an opportunity to request that their information be treated as confidential and that it therefore not be published. If the Minister is of the view that the information for which a confidentiality request has been submitted is enveloped by one of the enumerated categories of information found in section 52 of CEPA 1999, then the Minister would be authorized to publish the information only pursuant to the public interest exemption found in subsection 53(3) of CEPA 1999. If the Minister questions the validity of a confidentiality request, procedures are set out in section 53 of CEPA 1999, affording persons an opportunity to further justify their claims with both the Minister and, failing that, the Federal Court. The information, once in the hands of Environment Canada, is subject to the provisions of the federal *Privacy Act* and the *Access to Information Act*.

Q37 *Some industries might be concerned that releasing their GHG emissions data to the public could affect their competitive position. How have you addressed those concerns in the reporting system?*

All facilities that exceed the threshold are required to report. Similar data are already being collected and disclosed by other governments, including the governments of Alberta, British Columbia and Ontario. In addition, federal legislation provides companies with the opportunity to request the non-public disclosure of data whose publication they feel would jeopardize their competitive position, as defined under CEPA 1999. These provisions provide adequate protection of confidentiality where warranted, while at the same time ensuring public access to information that is in the public interest.

Q38 *Who will have access to information reported?*

The Minister of the Environment has indicated the intent to publish facility emissions data, i.e., emission totals by gas and by facility (except for confidential data protected under CEPA 1999). This information is published on Environment Canada's GHG website (www.ec.gc.ca/ges-ghg/default.asp?lang=En&n=8044859A-1).

Provinces and territories can enter into a data-sharing agreement with Environment Canada to access the complete dataset if they meet specific requirements under CEPA 1999. In accordance with their respective provincial or territorial legislation, a copy of the reported data could be made publicly available, subject to terms of provincial or territorial privacy and access to information laws.

Q39 *How do I request that my submission be treated as confidential?*

There are provisions under CEPA 1999 whereby reporters may submit, with the information that they are required to provide, a written request that this information be treated as confidential based on reasons set out in CEPA 1999 (section 52).

During the online process of reporting emissions, reporters will be asked if they are requesting confidentiality of their report under CEPA 1999. A similar question will be asked if there are applicable provincial/territorial statutes. The reporter must choose **yes** or **no**; if **yes** is chosen, the reporter must submit a written request along with justification and supporting documentation to Environment Canada (and the provincial government, if applicable). The reporter should upload this written request to the report prior to submitting it online.

Q40 *If a reporter is granted confidentiality in the first reporting year, must that reporter submit a confidentiality request every year thereafter?*

Yes, a request for confidentiality must be submitted each year to Environment Canada, since a request for confidentiality applies only to the reporting year in which the request was made.

Q41 *Is there an appeal process if a reporter has not been granted confidentiality? If so, what is the timeline to submit the appeal?*

Under CEPA 1999, a reporter has the ability to submit an appeal. As per section 53 of CEPA 1999, when a request for confidentiality is denied by Environment Canada, the Department will inform the reporter that data submitted by the reporter will be published and that the reporter has the option of having this decision reviewed by the Federal Court within a 30-day period. If no appeal to the Federal Court is made, then the information is made publicly available. If an appeal is made, the Federal Court reviews the confidentiality request and the reporter's information is kept confidential until this process is complete.

APPENDIX B: References

Environment Canada. 2014. *National Inventory Report, 1990–2012, Greenhouse Gas Sources and Sinks in Canada.* Environment Canada, Gatineau, Quebec, Canada.
The link to the full report can be found at: www.ec.gc.ca/ges-ghg

[IPCC] Intergovernmental Panel on Climate Change. 2006. *2006 IPCC Guidelines for National Greenhouse Gas Inventories. Intergovernmental Panel on Climate Change National Greenhouse Gas Inventories Programme.*
Available online at: www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

[IPCC] Intergovernmental Panel on Climate Change. *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.* [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, USA, 996 pp.
Available online at: www.ipcc.ch/publications_and_data/ar4/wg1/en/contents.html

United Nations. 1992. United Nations Framework Convention on Climate Change. Article 2, New York, USA.
Available online at: http://unfccc.int/resource/docs/convkp/conveng.pdf

United Nations. 2014. *Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013. Addendum. Part two: Action taken by the Conference of the Parties at its nineteenth session.* FCCC/CP/2013/10/Add.3.
Available online at: http://unfccc.int/documentation/documents/advanced_search/items/6911.php?priref=600007789

WWW.**ec.gc.ca**

Additional information can be obtained at:

Environment Canada
Inquiry Centre
10 Wellington Street, 23rd Floor
Gatineau QC K1A 0H3
Telephone: 819-997-2800 (in Canada only)
Fax: 819-994-1412
TTY: 819-994-0736
Email: enviroinfo@ec.gc.ca